

CORRESPONDENCE

Diminishing Returns

To the Editor, Eugenics Review

SIR,—Mr. D. V. Glass says (April 1935, page 53) that my suggestion that a rapidly declining Asiatic birth-rate would bring a boom in world trade "is highly improbable because the whole extension of division of labour, to which we owe our higher level of existence, is based upon expanding markets and larger populations." I submit that in countries of high natality a declining birth-rate expands the proportion and number of adults—and therefore expands markets; and, secondly, that a birth-rate has to fall very low before it causes actual reduction of population. The number of adults expands because, owing to the diminishing natality, their share of the insufficient food supply gets larger and thus they live longer. Their better-fed children live longer still. The present heavy mortality of children in Asia is a colossal economic waste, although there is some compensation in its eugenic selection.

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London.

To the Editor, Eugenics Review

SIR,—On page 54 of your April issue Mr. D. V. Glass says: "It is worth while stopping for a moment to consider, in the light of recent work, the whole question of the Malthusian adherence to the 'Law of Diminishing Returns.'"

Mr. Glass's consideration seems rather disappointing, as I cannot find any details of recent work in his remarks. As editor of the only Malthusian paper in this country, perhaps I may state why it is that Malthusians adhere to the Law of Diminishing Returns.

Their one and only reason for doing so is that every scientific agriculturist in the world adheres to that Law. Let us take some examples.

Viscount Bledisloe is perhaps the most able practical farmer in this country. On page 6 of *The Possibilities of British Agriculture* (1923), he speaks of "the melancholy economic law of diminishing returns," and a few lines further down he again speaks of "the inexorable economic law above referred to."

Professor Venn, of Cambridge, in his *Foundations of Agricultural Economics* (1923), has a "Note on the Law of Diminishing Returns." He says: "That it can anywhere, and for any considerable period of time, be nullified or widely evaded is unthinkable." (page 374).

Sir Henry Rew, on page 154 of *Food Supplies in Peace and War* (1920), speaks of "The Law of Diminishing Returns which governs farming operations."

The late Sir William Somerville, Professor of Agriculture at Oxford, says in his book on *Agricul-*

ture in the Home University Library: "In all agricultural operations it is well to bear in mind the operation of what is called the Law of Diminishing Returns" (page 164).

On page 46 of *Rothamsted Experiments* (1919), Sir Daniel Hall says: "Each increment in the cost of production, whether labour or manure, gives rise to a smaller proportionate return." That is probably the most succinct statement in existence of the Law of Diminishing Returns.

I could quote a number of other scientific agriculturists, both British and foreign, to the same effect. I have never heard of any scientific agriculturist who disputed the above statements.

R. B. KERR.

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To the Editor, Eugenics Review

SIR,—Thank you for giving me an opportunity of replying to these criticisms of my review in your last issue.

I think that Dr. Dunlop and I are arguing about different issues. My review was not attempting to justify an increasing Asiatic population, although a perfectly good economic case can be made out for it. For various reasons it would be preferable to have a stationary population, in spite of the dangers of instability inherent in such a state, at least under the competitive system. But a stationary population in Asia can be achieved with a relatively slight diminution in natality. There are so many causes of death extraneous to malnutrition, and the provision of medical and general public health services in Asia is so inadequate, that a rapidly falling birth-rate would cause an absolute decline in population in a short space of time. It is important to bear this in mind, otherwise, in terms of Dr. Dunlop's own analysis, the best short-term method of increasing Asiatic purchasing-power would be by a complete cessation of births.

As for Mr. Kerr's criticism, it seems to me beside the point. His quotations are perfectly sound in themselves, but have little relevance to the question discussed in my review—the relation between diminishing returns and over-population.

Three points appear to need emphasizing. First, although the law of diminishing returns, as evolved by Sir Edward West, was thought to apply only to agriculture, it is now generally realized that this law is a simple technological one, equally valid wherever varying units of one factor of production are applied to a given unit of another factor. If at any instant, and the time proviso is an important one, successive units of capital are applied to a fixed amount of labour, there will result, first, increasing returns per unit of capital, then maximum returns, and afterwards diminishing returns. Expressing the results in terms of a parabola, maximum returns will obtain at the

point where a tangent drawn to the curve passes through the point of origin (see F. H. Knight, *Risk, Uncertainty and Profit*, page 100). Below this point, returns per unit of capital will be increasing, while beyond it they will be decreasing. Agriculture, therefore, occupies no exceptional place in the field of economic analysis.

Secondly, the main economic question is one of costs rather than returns, and the cost per unit of additional production may continue to fall for some time after the returns per unit to one of the factors have begun to diminish. This takes place because in the actual economic system, all of the factors of production are scarce, and not merely one of them (see Carver, *The Distribution of Wealth*, chapter on "Diminishing Returns").

Thirdly, to continue with our general analysis, we can say that at any instant of time, the whole of industry and agriculture is on the verge of increasing costs. The reason is that at an instant, or in a short period of time, the supply of factors of production is fixed, and expansion can only be undertaken by offering higher prices for the factors. We may conclude, therefore, that at any given moment the returns to one or more of the factors employed in agriculture have passed beyond the point of maximum returns, and also that agriculture is on the verge of increasing costs.

This conclusion is very similar to that at which the eminent agriculturists quoted by Mr. Kerr have arrived, though their reasons for so doing are rather different. But Mr. Kerr has stopped short at this stage of the argument, assuming that there is nothing further to be said. In fact, however, the most important conclusion lies beyond this stage. We are concerned not so much with what happens at any particular moment, but with the trend shown during a period. Now it is obvious that although at a point of time agriculture is in a state of decreasing returns, over a period its returns increase and its costs decrease.

In the period 1800 to 1900 the entire costs plane was lowered and the entire returns plane raised. It costs less to produce a bushel of wheat to-day than it did in 1800, and the return to an hour's labour in agriculture is greater now than it was a century ago. The causes of this change include progress in the arts and crafts, the accumulation of capital and the expansion of markets (see Allyn Young, "Increasing Returns and Economic Progress," *Economic Journal*, 1928, also the costs controversy in the same journal, 1926-7). To say, as Professor Venn apparently does, that any widespread evasion of the law of diminishing returns is unthinkable, is to believe that instantaneous or short-period petrification is the essential and constant aspect of our society, while long-period progress is temporary and exceptional. Or, to quote a famous Russian political scientist, "This is equal to saying that the stopping of trains at stations represents the universal law of steam transport, while the motion of trains between

stations is a temporary tendency which paralyses the operation of the universal law of stopping."

D. V. GLASS.

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The Galton Lecture

To the Editor, Eugenics Review

SIR,—Professor Carr-Saunders' Galton Lecture will have given many eugenicists food for thought. Especially valuable was his suggestion that our *Society* could act as a co-ordinating agency whereby the activities of many unconnected social organizations could not only be brought into closer contact, but also given that eugenic tendency which they now almost wholly lack. It is valuable because so much might be accomplished with the expenditure of such a comparatively small amount of money and effort.

If we can once convince people that every social question, from housing to education, from taxation to public health, has of necessity a biological aspect, we should be in a fair way to canalize, in the direction which we think desirable, much of that vast amount of interest and energy which is expended on the reform of abuses and the betterment of social conditions, but for the most part now without any realization of its long-term bearings upon quantity and quality of population.

He is also without question right in saying that now, when population problems are inevitably about to become matters of popular concern and political importance, is the time to take action. If we do so, we can lead opinion; if not, we shall find opinion crystallizing in dangerous forms under the influence of ignorance and prejudice, and resisting all attempts at rational guidance.

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The Problem of Maternal Mortality

To the Editor, Eugenics Review

SIR,—I am invited to reply to Lady Williams's criticism in your April issue of my article in the January issue. While I do not wish to take refuge in the assistance of my medical friends, I gratefully acknowledge that your editorial notes provide some answer to Lady Williams's indignant castigation. It is not alone among the corroboratory letters and articles I have received from medical men who generally belong, perhaps inevitably, to the faculty in which I would expect most opposition or attempted refutation.

Since Lady Williams finds my *résumé* "so startlingly provocative, both as regards the statements made and the conclusions drawn," and has no doubt that abler pens than hers will reply, she may be interested in the observation I recently received in a letter from Dr. Charles Herrman of New York, whose paper on Maternal Mortality Rate (*American Medicine*, New Series, 1933, 27,